

**EPA Superfund
Record of Decision:**

**OAK RIDGE RESERVATION (USDOE)
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OAK RIDGE, TN
09/30/1992**

**Record of Decision
for the
Y-12 Plating Shop Container Areas**

Prepared for
U.S. Department of Energy
under contract DE-AC05-90OR21851

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SITE NAME AND LOCATION

Y-12 Plating Shop Container Areas, S-334 and S-351
Oak Ridge Reservation
Oak Ridge, Tennessee

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) is issued by the U.S. Department of Energy (DOE), the lead agency responsible for remediation of the Oak Ridge Reservation (ORR). In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), this document presents DOE's decision that no further action is necessary to achieve protection of human health and the environment at the DOE Y-12 Plant (Y-12) Plating Shop Container Areas in Oak Ridge, Tennessee.

The state of Tennessee and the U.S. Environmental Protection Agency (EPA) concur with this "no further action" decision for the Y-12 Plating Shop Container Areas.

DESCRIPTION OF THE SELECTED REMEDY: NO FURTHER ACTION

Based on a conservative exposure scenario for current and future industrial land use at the Y-12 Plating Shop Container Areas, the total excess cancer risk is below the EPA-established range of concern, and non-carcinogenic health effects are below the threshold for potential concern. Thus, no further action is necessary to protect human health at this site.

PART 1:

DECLARATION

RECORD OF DECISION FOR THE Y-12 PLATING SHOP CONTAINER AREAS
U.S. DEPARTMENT OF ENERGY
OAK RIDGE Y-12 PLANT
OAK RIDGE, TENNESSEE

DECLARATION STATEMENT

No further remedial action is necessary to achieve protection of human health and the environment at the Y-12 Plating Shop Container Areas based on the reasonably foreseeable use of this area for industrial purposes. Because this ROD addresses only the soil at the Plating Shop Container Areas, review of these sites and this decision will continue while final remedial alternatives are developed for the Upper East Fork Poplar Creek (UEFPC) Integrator Operable Unit (OU), which will assess groundwater, surface water, and runoff. A decision on the need to apply a 5-year review for these sites, as described in CERCLA Sect. 121(c), will be made when the overall final remedial decisions are made for this area.

Manager, Oak Ridge Field Office
U.S. Department of Energy
Date

Director, DOE Oversight Division
State of Tennessee
Department of Environment and Conservation

9/22/92
Date

for Regional Administrator, Region IV
U.S. Environmental Protection Agency

9-30-92
Date

PART 2:

DECISION SUMMARY

RECORD OF DECISION FOR THE Y-12 PLATING SHOP CONTAINER AREAS
U.S. DEPARTMENT OF ENERGY
OAK RIDGE Y-12 PLANT
OAK RIDGE, TENNESSEE

SITE NAME, LOCATION, AND DESCRIPTION

Y-12 is part of the ORR Superfund Site and is adjacent to the city of Oak Ridge in Anderson County, Tennessee. Y-12 occupies the upper reaches of East Fork Poplar Creek in Bear Creek Valley, which lies between Pine Ridge to the north and Chestnut Ridge to the south. The Plating Shop Container Areas lie within the UEFPC watershed.

The Plating Shop Container Areas are the collection and storage sites for spent plating solutions and sludges generated in the Plating Shop at Building 9401-2. The Plating Shop Container Areas, S-334 and S-351, are adjacent to Buildings 9401-2 and 9720-29, respectively, in the southern portion of Y-12 (see Fig. 1).

The Plating Shop Container Areas are within the fenced security area of Y-12 and are devoid of vegetation; the presence of animals is unlikely.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Oak Ridge Y-12 was built by the U.S. Army Corps of Engineers in 1943 as part of the Manhattan Project. The original mission of the plant was to separate the fissionable isotope of uranium ($[^{235}\text{U}]$) using an electromagnetic separation process. After World War II, this process was discontinued in favor of a more economical gaseous diffusion process conducted at the Oak Ridge Gaseous Diffusion Plant.

Recent activities at Y-12 have included chemical processing of lithium and uranium compounds, precision fabrication of components from these and many other materials, and assembly of the components into major subassemblies for nuclear weapons. In support of these activities, the plant conducts metallurgical and machine shop operations, including electroplating.

Building 9401-2 was built in the early 1940s as part of the original plant. Around 1955, this building was converted to a plating shop for the Metal Preparation Division at Y-12. Because wastes generated from these operations require temporary storage (less than 90 days) pending transportation to treatment facilities, spent plating solutions and sludges have been collected in containers in two accumulation areas - S-334 and S-351.

Area S-334 is adjacent to Building 9401-2 and has been in use since 1983. Wastes are transferred via pneumatic pump from the process tanks in Building 9401-2 to movable 600-gal polyethylene tanks. These polyethylene tanks are temporarily stored in S-334 before being shipped to the West End Treatment Facility or the Central Pollution Control Facility for on-site treatment. A waste volume of three to four polyethylene tanks is generated monthly. The transfer area primarily consists of gravel over soil, although the extreme east end of S-334 is paved. A diked tanker transfer station and diked polyethylene tank transfer station were recently constructed and are currently used as a 90-day storage area.

Area S-351 is north of Building 9720-29. Use of this storage area was recently discontinued. Waste sludges and any remaining liquids from the process tanks in Building 9401-2 were manually shoveled into 55-gal drums, which were placed on pallets and temporarily stored at S-351, pending treatment and/or disposal. This area, originally soil and gravel but paved several years ago, had been in use since 1955.

The Hazardous and Solid Waste Amendments of 1984 (HSWA) to the Resource Conservation and Recovery Act of 1976 (RCRA) extended EPA's authority to correct releases to all media and all solid waste management units (SWMUs) at RCRA facilities. The first RCRA permit to be approved for the ORR under the HSWA provisions became effective October 26, 1986. This permit specified that general information for all ORR SWMUs was to be provided to the appropriate regulatory authority and that a RCRA Facility Investigation (RFI) be conducted for each SWMU known to have released hazardous wastes or hazardous constituents to the environment. The two container storage areas, S-334 and S351, are SWMUs as defined by RCRA and were the subjects of an RFI completed in 1988 (Energy Systems July 1988).

The ORR was placed on the CERCLA National Priorities List in the November 21, 1989, Federal Register. Thus, the ORR also falls under the jurisdiction of the mandates of CERCLA. Although the investigation of the Plating Shop Container Areas was initiated under RCRA, subsequent steps in the remedial alternatives evaluation and selection process conform to CERCLA program regulations and guidance.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

To fulfill the public participation requirements under Sect. 117(a) of CERCLA, as amended by the SARA, the Proposed Plan for the Y-12 Plating Shop Container Areas was released to the public on June 10, 1992, and is available in the administrative record maintained at the DOE Information Resource Center at 105 Broadway in Oak Ridge. The Proposed Plan was available for public comment from June 15 through July 15, 1992. Notices of availability were published in The Oak Ridger on June 14, 1992, in the Knoxville News-Sentinel on June 16, 1992, and in The Roane County News on June 17, 1992. The notice stated that a public meeting concerning the Proposed Plan would be arranged if requested by June 29, 1992; however, no one requested a public meeting.

Comments were summarized and responses are provided in the Responsiveness Summary section of this ROD. This ROD presents the "no further action" decision for remediation of the Y-12 Plating Shop Container Areas on the ORR in Oak Ridge, Tennessee, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. The decision for this site is based on the administrative record.

SCOPE AND ROLE OF OU

Under Superfund, an OU is defined as a discrete action that comprises an incremental step toward comprehensively addressing site problems. The Plating Shop Container Areas are included in the Y-12 Study Area, a group of lower priority contaminant source units, some of which may be assigned to an OU in the future. As explained below, DOE has accelerated the CERCLA decision process for the Plating Shop Container Areas because the sites are needed for industrial expansion. Because DOE is proposing "no further action," the term source control "operable unit" (or OU) is somewhat of a misnomer when applied to the Plating Shop Container Areas and will not be used again in this document. However, it should be stressed that the "no further action" decision pertains to the Plating Shop Container Areas S-334 and S-351 soils only, not to the entire Y-12 Study Area. The Plating Shop Container Areas are located within the UEFPC hydrogeologic regime. The groundwater, surface water, and runoff associated with this complex hydrogeologic regime will be addressed by the UEFPC integrator OU as part of the ORR Y-12 OU strategy.

Use of Plating Shop Container Area S-351 has recently been discontinued. DOE plans to construct a modern, automated plating facility east of Building 9401-2. Plans for replacing the plating facility are outlined in the Environmental Assessment for the Plating Shop Replacement, Y-12 Plant, Oak Ridge, Tennessee (DOE-OR March 1992). (This document is in the administrative record file at the DOE Information Resource Center.) Building 9720-29, including SWMU S-351, along with Building 9811, would be demolished for construction of this site. This would require removing the existing asphalt paved storage area overlying the contaminated subsoil according to standard Y-12 procedures, as well as excavating the site. Any future Plating Shop expansion or decontamination and decommissioning that will involve excavation at the Plating Shop Container Areas will require managing excavated soils as solid waste pursuant to RCRA. Plating Shop Container Area S-334 will continue to be used to temporarily store waste plating solutions and sludges.

SITE CHARACTERISTICS

DOE issued a remedial investigation (RI) Report (Energy Systems May 1992) based on the RFI (Energy Systems July 1988, April 1989), which included a quantitative baseline risk assessment used to determine the appropriateness of proceeding with remedial actions and to provide recommendations to support a ROD. The results of the RI are as follows:

- Spills at the Plating Shop Container Areas have released inorganic and organic contaminants to the surrounding subsoil. The contaminants of concern are carbon disulfide, chloroform, ethylbenzene, methylene chloride, styrene, tetrachloroethene, toluene, trichloroethene, xylene, barium, beryllium, cadmium, chromium, cyanide, lead, mercury, and nickel.
- The inorganic contaminants present in the subsoil at concentrations slightly above regional background levels are cyanide, nickel, and lead. Table 1, derived from the RI report, lists the concentrations of these contaminants. Organic contaminants detected frequently and present at low concentrations in the subsoil are tetrachloroethene and methylene chloride. Table 2 presents the concentrations of these organic chemicals as noted in the RI.
- Site contamination at the Plating Shop Container Areas is limited to the subsurface soil. Migration of contaminants to groundwater and surface water is unlikely because they are present at low concentrations, the physical and chemical properties of the soil and the contaminants are not conducive to the transport of inorganics to the groundwater, and gravel and asphalt surfaces of the sites reduce erosion.

SUMMARY OF SITE RISKS

Subsoils within the Plating Shop Container Areas currently pose no threat to human health. In order to determine the potential adverse human health effects of the site, DOE has developed a conservative exposure scenario in which site excavation would expose humans to contaminated soil. The risk assessment of this hypothetical exposure scenario is based on current and future industrial land use. This baseline risk assessment takes into account both the cumulative risk of exposure to multiple contaminants and multiple exposure pathways. Under conditions most conducive to exposure, the total excess cancer risk through all exposure pathways to on-site excavation workers would be approximately 2×10^{-8} . This means that two additional people per 100 million would have a chance of contracting cancer as a result of exposure to the contaminated soil. For plant employees in the vicinity of the hypothetical excavation, the total excess cancer risk would be smaller at 2.7×10^{-9} . These risk values are below the range of concern (1×10^{-4} to 1×10^{-6}) for carcinogenic effects established by EPA's Office of Emergency and Remedial Response. The contribution to the total excess cancer risk by beryllium was the highest (1×10^{-8}) of any contaminant, but this risk is well below the range of concern. Furthermore, beryllium was detected at the site in concentrations ranging from 0.9 to 1.1 mg/kg, which corresponds to the background soil concentration (1.1 mg/kg) in the Oak Ridge, Tennessee, area.

The total exposure hazard quotient for non-carcinogenic risk to excavation workers is less than one for all contaminants; thus, the risks for non-carcinogenic health effects are below the threshold potential concern.

The baseline risk assessment indicates that the conditions at the Y-12 Plating Shop Container Areas pose no current or potential threat to human health or the environment. Thus, no further remedial action is necessary to ensure adequate protection under Sects. 104 and 106 of CERCLA. Should excavation occur at the site, associated carcinogens are unlikely to pose significant excess cancer risks.

Because the Plating Shop Container Areas are within the fenced security area of Y-12 and are devoid of vegetation, the presence of animals is unlikely. The probability of detectable impacts to terrestrial and aquatic plants and animals is low.

DESCRIPTION OF THE "NO FURTHER ACTION" ALTERNATIVE

Because the total excess cancer risk is below the EPA-established range of concern and non-carcinogenic health effects are also below the threshold for potential concern based on a conservative exposure scenario for current and future industrial land use, no further action is necessary to protect human health at the Y-12 Plating Shop Container Areas. Furthermore, potential adverse environmental impacts at the site are improbable. Thus, Sects. 104 and 106 of CERCLA are satisfied.

Although not required for this site by CERCLA, DOE will conduct a review of the Plating Shop Container Areas every five years.

EXPLANATION OF SIGNIFICANT CHANGES

No significant changes have been made to the "no further action" decision selected in the Proposed Plan.

REFERENCES

Energy Systems (Martin Marietta Energy Systems, Inc.) May 1992. Remedial Investigation Report for the Plating Shop Container Areas (S-334 and S-351) at the Oak Ridge Y-12 Plant, Oak Ridge, Tennessee, ES/ER-36&D3.

Energy Systems April 1989. RCRA Facility Investigation Plan: General Document, Vol. I, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee, Y/TS-352.

Energy Systems July 1988. RCRA Facility Investigation Plan, Plating Shop Container Areas (S-334, S-351), Y-12 Plant, Oak Ridge, Tennessee, Y/TS-408.

DOE-OR March 1992. Environmental Assessment for the Plating Shop Replacement, Y-12 Plant, Oak Ridge, Tennessee, DOE/EA/0502.

PART 3:

RESPONSIVENESS SUMMARY

RECORD OF DECISION FOR THE Y-12 PLATING SHOP CONTAINER AREAS
U.S. DEPARTMENT OF ENERGY
OAK RIDGE Y-12 PLANT
OAK RIDGE, TENNESSEE

DOE established a public comment period from June 15 through July 15, 1992, for interested parties to comment on DOE's Proposed Plan for the Y-12 Plating Shop Container Areas. No public meeting was requested and none was held.

A responsiveness summary is required by Superfund law and regulations to provide a summary of citizen comments and concerns about the site, as raised during the public comment period, and the responses to those concerns. Four copies of the Proposed Plan were picked up at the Information Resource Center for review by the public. Only the Oak Ridge Local Oversight Committee, Inc., responded to the Proposed Plan. The committee concurred in writing with the selection of the "no further action" alternative for the Y-12 Plating Shop Container Areas.

Overview

At the time of the public comment period, the preferred alternative for interim action at SW31 Perennial Spring, K-25 Site, near the city of Oak Ridge in East Tennessee, addressed the remediation of SW31 through a 3-stage treatment process. The preferred alternative in the Proposed Plan cleaned up the discharge by means of air stripping, activated carbon polishing, and final treatment at CNF, which is an NPDES-permitted water treatment facility at K-25. This scheme results in the discharge of an NPDES-permitted stream to surface waters under the established permit for the K-25 Site.

Judging from the comments received during the comment period, support for the proposed solution is consistent. Accordingly, the preferred alternative has been selected for action at the SW31 site as presented in the Proposed Plan. The community expressed a preference about routing water to CNF that has been incorporated in the selected alternative presented in the IROD.

Background on Community Involvement

SW31 Perennial Spring surfaces within the perimeter fence of K-25. Access to the site is restricted by existing institutional controls. The contamination of SW31 has raised little interest in the community at large because of the isolated location and restricted access to this spring.

The public at large has been involved in the general environmental restoration of the DOE's facilities on the ORR through various activities on many occasions. However, interest has focused on SW31 only in correspondence to the public comment period of the Proposed Plan for Interim Action at this site.

Summary of Comments Received and Agency Responses

The public comment period was held for 30 days from July 2 to July 31, 1992. Few comments were received; they are addressed as follows.

Comment: Routing water to the CNF via pipeline would be desirable if the time frame for remediation would render this solution economically viable; otherwise, trucking is preferred.

Response: The selected remedy comprises a pipeline for routing water to CNF. Its construction will not adversely impact the time frame for remediation. On the other hand, this solution would become economical in a time frame of 6 months to 1.5 years, compared to transporting water by tanker. It is not expected that a permanent solution for SW31 will be approved before this time. The Remedial Investigation for K-1070 OU is scheduled to begin in the later part of 1992, and the decision document for this OU is scheduled after 1996. This schedule is subject to revision, and there is presently no assurance about a due date. It is, however, reasonably certain that this date will make the time necessary to construct a pipeline economically attractive when compared to trucking.

Comment: A categorical exclusion under the National Environmental Policy Act (NEPA) that is appropriate for removal actions may not be appropriate for an interim remedial action. This comment was addressed in the discussion of NEPA compliance in the Proposed Plan.

Response: The categorical exclusion for removal actions in Appendix B to Subpart D of the DOE NEPA Implementing Procedures (Federal Register, Volume 57, Number 80, April 24, 1992) at page 15156 includes actions that are "taken as final response actions and those taken before remedial action," including "treatment, recovery, storage, or disposal of waste at existing facilities currently handling the type of waste involved in the removal action." The installation of an organic air stripper can be defined as a removal action because it constitutes a form of treatment and disposal of contaminated waste taken as an interim action that will be superseded by a final remedial initiative.

Comment: "In light of the NEPA review and subsequent Memorandum-To-File referred to in the plan, perhaps the reference to a categorical exclusion is unnecessary."

Response: The commenter is correct. There is no requirement to cite a categorical exclusion in light of the approved Memorandum-To-File (MTF). However, the MTF was reviewed to ensure that its contents remained consistent with the requirements of the DOE NEPA Implementing Procedures published April 24, 1992, and to ensure that there had been no change in the scope of the project since the MTF was signed. It was found that the MTF was still valid. The reference to the categorical exclusion was, however, not removed from the text as no conflict is perceived to exist.

Comment: Why will an easily implemented solution like the selected remedy, for a problem known since at least 2 years ago as apparent from the NEPA documentation, take 3 years to put in practice-allowing the 10 months necessary for implementation?

Response: A public comment concerning the duration of implementing the interim action at the site and not applying the removal action in accordance with 40 CFR 300.415 (b)(1) is acknowledged; however, during early investigations of the SW31 spring, adequate data needed to be obtained for use in planning and documenting the removal action as depicted in 40 CFR 300.415(b)(4)(ii)(B). Additionally, due to the variable contaminants detected in the stream, there was initial uncertainty as to the appropriateness of an air stripper as the viable treatment alternative. The Environmental Management Division at the K-25 Site, in consultation with the Oak Ridge National Laboratory, initiated a research and development (R&D) study incorporating a multi-stage bioreactor for R&D demonstration as a cost-effective, innovative technology. This approach was initiated in keeping with EPA's encouragement to use innovative technology(ies) where applicable on federal installations. The removal action was not initiated because the stream did not pose an imminent threat to human health. A time-critical response was not initiated because the stream did not pose an imminent threat to human health, although it represented a pressing concern for possible degradation of the environment. The interim action process was chosen as the most effective implementation of a non-time-critical response.

Remaining Concerns

At the end of the public comment period, no other concerns had been raised by the community.